



THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

Drought's grip loosens in the Northwest

By Darin Langerud

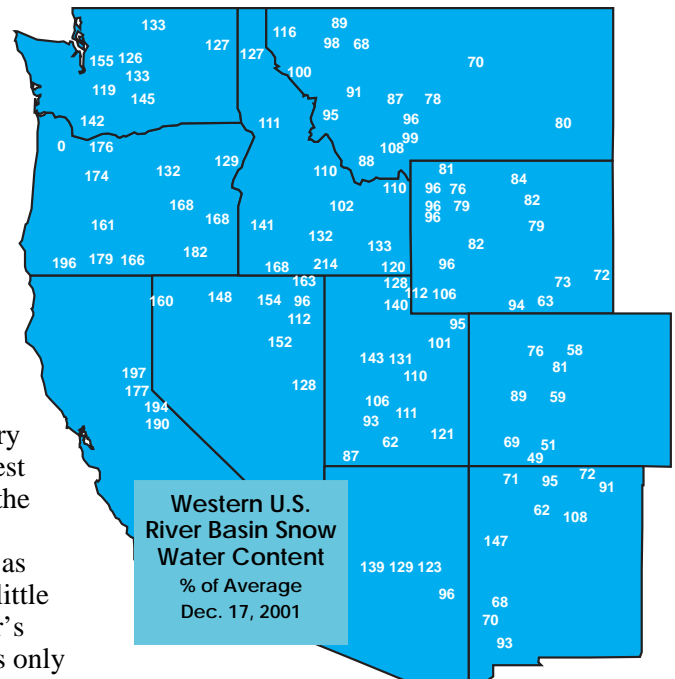
Living in an agricultural state like North Dakota, we tend to be in tune with nature, especially the weather. With all that Mother Nature can throw at us, perhaps no word causes more concern among the agricultural community than drought. It wreaks havoc with all aspects of agriculture, both with planted crops and livestock. The results of such events can be devastating, not only to agriculture, but to the state's economy.

While much of North Dakota has experienced a wet cycle for most of the last decade, drought conditions are ongoing in other parts of the United States. Many readers of this magazine will recall the situation in the Klamath basin in Oregon this past summer as water for irrigators in the region was shut off due to extreme drought conditions and concerns over endangered species. Although it's early in the season, the drought that has gripped much of the Pacific Northwest and northern Rocky Mountain region may be showing some signs of breaking, as a series of late fall storms have dropped heavy snows over much of the affected area. Current snowpack measurements in many northwestern states are well above average for this time of year, as are snow water equivalents. While this is a promising sign, about two-thirds of the snow season still remains, and the situation could change if the weather pattern shifts significantly.

Another area of concern that hits much closer to home is the snowpack in the mountains of Montana, the

headwaters of the Missouri River. Much of Montana has been besieged by a significant drought for the past two years. Since the vast majority of inflow to the Missouri River and Lake Sakakawea is generated by melting snow, winter precipitation is very important to the upper Missouri River system. While snowpack looks very good at this early stage west of the continental divide, the situation for the Missouri headwaters is not as rosy, as precipitation is running a little below normal. Last winter's snowpack in Montana was only 60 to 70 percent of normal. Fortunately, voluminous runoff in parts of South Dakota and Nebraska forced the U.S. Army Corps of Engineers to reduce releases at Garrison Dam to lower the risk of flooding downstream, preserving water in the lake. Sakakawea has become a very important recreational draw in our state and adequate lake levels must be maintained to preserve the fishery and allow access.

Since spring runoff is so important to the states in the west, many of them operate cloud seeding programs to increase snowfall during the winter season. California, Nevada, Utah, and Wyoming have long-running programs for increasing snowfall, with Idaho recently starting a program as well. Sponsors of these programs include county and state governments, irrigation districts, ski areas, and power companies. Evalua-



Data source: Water and Climate Center, NRCS, Portland, Oregon

tions of these programs suggest increases in precipitation by up to 20 percent, producing water at a cost as low as \$1 per acre/foot. Even with the dozens of programs already in place, cloud seeding is a technology that has the potential for wider application over the mountainous west.

Many people will be watching snowflakes fall with interested eyes over the next few months. The season is off to a fairly good, if uneven start. Let's hope for a strong finish. ■

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